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THE CONSTRUCTION AND EQUIPMENT OF A SMALL SLAUGHTERING PLANT

The present wartime conditions have caused an increased public interest in small slaughtering plants. Many inquiries have been received from those contemplating the erection of such plants, and from State and local officials who desire information regarding slaughtering facilities that are well adapted to the maintenance of good sanitation and which can be constructed at minimum cost. This publication is for the purpose of furnishing information that will be helpful in building small plants for the sanitary conduct of slaughtering operations. The suggestions and recommendations contained herein are subject to the approval of State and local authorities having jurisdiction, and they should be consulted before undertaking the erection of such a plant. If the preparation of meat for interstate or foreign commerce is contemplated, Federal meat inspection is required, and it would be necessary that the plant meet the requirements of the Federal meat inspection service as to construction, arrangement and facilities. Information regarding the requirements for the inspection may be obtained by writing the Chief, Meat Inspection Division, Office of Distribution, War Food Administration, Washington 25, D. C.

The slaughtering facilities shown on the drawings herewith are suitable for the slaughter of about 10 cattle, 20 hogs, and 20 calves or 20 sheep a week. If other kinds of animals are not slaughtered, the lay-out is suitable for slaughtering about 60 hogs a week. It is desirable that provision be made for expansion of the plant in case it is desired to materially increase the volume of slaughtering.

In selecting a site, it is of paramount importance that the plant be located so that an ample supply of potable water from a source that is properly protected from pollution and a suitable method of sewage disposal are available. A potable water supply from a municipal source is usually preferable to a private supply. If it is possible it is desirable to discharge the sewage from the plant into a well designed municipal sewer system.

An adequate supply of hot water having a temperature approximating 180° F. at the outlets is essential for the maintenance of good sanitation in the plant. A boiler for supplying steam and for producing hot water is shown on the drawings. It is recommended that a 5-horsepower boiler or one having a greater capacity be installed.

It will be noted that the floor of the slaughtering room is about 3 feet above the level of the surrounding ground. This is to place the loading platform at approximate truck-body height so as to facilitate loading meat onto trucks and to enable paunch contents and blood to be gravitated to the paunch contents receiver and the blood receiver shown in the boiler room. For the maintenance of good sanitation, it is

important that the floor and the side walls to a height of at least 5 feet be constructed of impervious material. Concrete floors and walls with a concrete wainscot are shown in the two workrooms. Other non-absorbent materials such as vitrified packing house brick for the floors and glazed brick or tile for the walls may be used to good advantage. The concrete floors should have a wood float finish to afford a good foothold, and be pitched about $1/4"$ a foot to the floor drains. The floor drains should be equipped with deep-seal traps (P-S or U-shape) and the drainage lines should be properly vented to the outside air. If a grease catchbasin is installed, the drainage from water closets and urinals should not be discharged into it but be disposed of separately. The junctions of walls and floors should be suitably coved, and the buildings should be of rat-proof construction insofar as possible. The exposed interior surfaces of the walls above the concrete wainscot may be constructed of smooth-surfaced material such as D&M lumber or plywood of adequate thickness. The walls of the cooler should be insulated with suitable insulating material and surfaced on the inside with smooth emulsified asphalt or portland cement plaster. The ceilings should be sheathed with smooth material such as D&M lumber or plywood.

It is desirable that ante-mortem and post-mortem inspections of the animals slaughtered be made by a properly qualified inspector in the employ of the State or local authorities having jurisdiction in such matters. Minimum facilities for the conduct of post-mortem inspection are a cattle and calf head flushing and washing booth, head inspection rack with loops for holding three or more cattle or calf heads, and a suitable metal truck for the inspection of the viscera of cattle, hogs, calves, and sheep. Suitable facilities for cleansing and disinfecting the equipment used for making post-mortem inspections should be provided. The afore-mentioned facilities are not shown on the drawings, and adequate space for them within the area of the $15\frac{1}{2} \times 23\frac{1}{2}'$ slaughtering room shown on the drawings is not available. If they are installed the room should be suitably enlarged.

Adequate cooler facilities are an important measure in preventing the spoilage of meat. In some cases owners or operators may desire to slaughter animals at the plant and convey the meat to cooler facilities located elsewhere. Therefore optional cooler facilities that may be omitted or added to the front of the plant if desired are shown. The cooler drawing should be rotated to the left 90° and the two points marked (C) made to coincide to show the relationship of the cooler to the slaughtering room. The cooler door is to be substituted for the window at the point marked (D).

EQUIPMENT

Equipment should be so constructed that it can be readily kept clean, and stationary equipment should be placed at least 12" from walls,

floors, posts, and other fixed parts of the building to facilitate ready cleaning of outer surfaces. The lavatory (hand washing basin) should be supplied with hot and cold water delivered through a combination mixing faucet with single outlet about 12" above the rim of the bowl so that arms as well as hands may be washed in running tempered water. Liquid soap in a suitable dispenser and sanitary towels should be provided at the lavatory. All outer openings that would admit flies should be effectively screened.

Suitable heating facilities should be provided in the slaughtering and inedible products rooms to dispel steam and vapor. The natural lighting furnished by the windows should be supplemented by artificial lighting of good quality.

USE AND ARRANGEMENT OF FACILITIES

Slaughtering Facilities

- (1) Animals are driven into the knocking pen, and after stunning cattle and calves are ejected onto the area in front of the pen. The stunned animals are shackled and hoisted for bleeding on the 14-foot rail by means of the traveling chain hoist shown in outline on Section AA. Hogs and sheep are hoisted for bleeding without stunning on the above-mentioned equipment. The bleeding of hogs, calves, and sheep from a rail in the same manner as cattle instead of on the floor or a raised platform, as is sometimes done, is strongly recommended as a measure that promotes good sanitation and results in better bleeding of carcasses.
- (2) After cattle carcasses are bled, heads are skinned and removed, and the carcasses are transferred on the 14-foot rail to a position over the pritch plates and there lowered to floor level with necks toward the knocking pen.
- (3) After siding operations are completed, trolley hooks attached to a spreader are inserted in the hocks of carcasses and the carcasses are elevated by the hoist to the proper heights for rumping, eviscerating, backing, and splitting.
- (4) Carcasses are then further elevated by means of the hoist to the proper height for placing the trolley hooks on the 11-foot rail, and are then suspended by the trolley hooks from the rail. Hides are removed, chucks are split, and the carcasses are washed while suspended from the rail.
- (5) Hog carcasses after bleeding are transferred to the scalding vat by means of the traveling hoist. After scalding, all hair and scurf

are removed from the hind feet, gambrels are inserted, and the carcasses are elevated and suspended from the 14-foot rail. While suspended from the rail near the scalding vat, the loosened hair and scurf are removed by means of a bell scraper or similar implement. Or as an alternative method, carcasses may be placed on a table or bench near the rail for removal of hair and scurf.

(6) After washing and removal of heads, hog carcasses are opened and eviscerated and conveyed to a point opposite the 11-foot rail and transferred to trolleys of such length that the carcasses are suspended at sufficient height to avoid contamination from contact with or nearness to the floor (gambrels should be about 9' above the floor). After transfer to the 11-foot rail, leaf fat and kidneys are loosened or removed.

(7) Sheep and calves are handled in a manner similar to hogs except that they pass over the section of the 14-foot rail used for cattle.

(8) Only one carcass is dressed at a time, and an animal should not be ejected from the knocking pen until the area in front of it and the pritch plate area are thoroughly hosed down and all blood and other floor accumulations are removed.

Other Facilities

Edible product is cooked in the lard cook kettle shown in the slaughtering room. A kettle is also provided in the inedible products room for cooking inedible material and for the preparation of animal feed.

Paunch contents and hog hair are conveyed by means of an 8" pipe from the curbed-in paunch emptying area in the slaughtering room to the receiving bin in the boiler room. After dewatering, this material should be placed in watertight containers and disposed of by sanitary burial or other unobjectionable means. Blood is collected in the receiver and removed from the plant in watertight metal receptacles, or it may be cooked in the kettle in the inedible products room and used as an ingredient of animal feed. Other inedible material should be placed in watertight metal containers and held in the inedible products room pending daily removal from the plant.

Facilities for the storage of supplies, equipment, etc., and for the storage of hides are not shown. It is suggested that a suitable small building containing a hide storage room with floor and walls of impervious material and a room for the storage of supplies, etc., be provided near the main building.

Suitable toilet facilities, preferably of the water-flushing type, properly separated from workrooms, should be provided. These facilities

and a suitable separate dressing room may be located in a building near the slaughtering building. If a privy is provided, it should be so constructed that it meets the requirements of State and local health authorities.

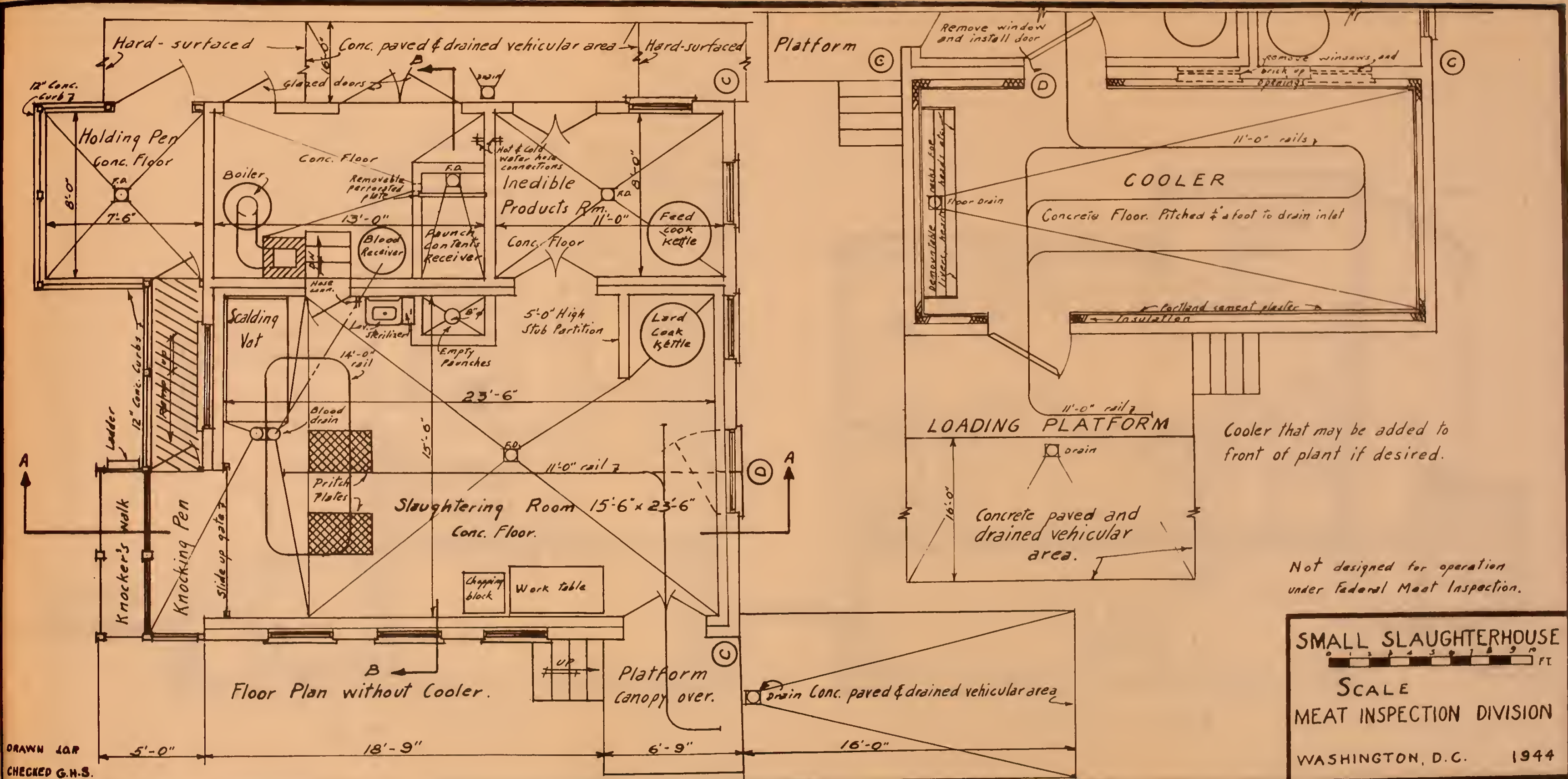
The paved and drained vehicular loading area shown on the drawings should be connected with the public highway by means of a roadway suitably surfaced so as to avoid a dust nuisance affecting the plant.

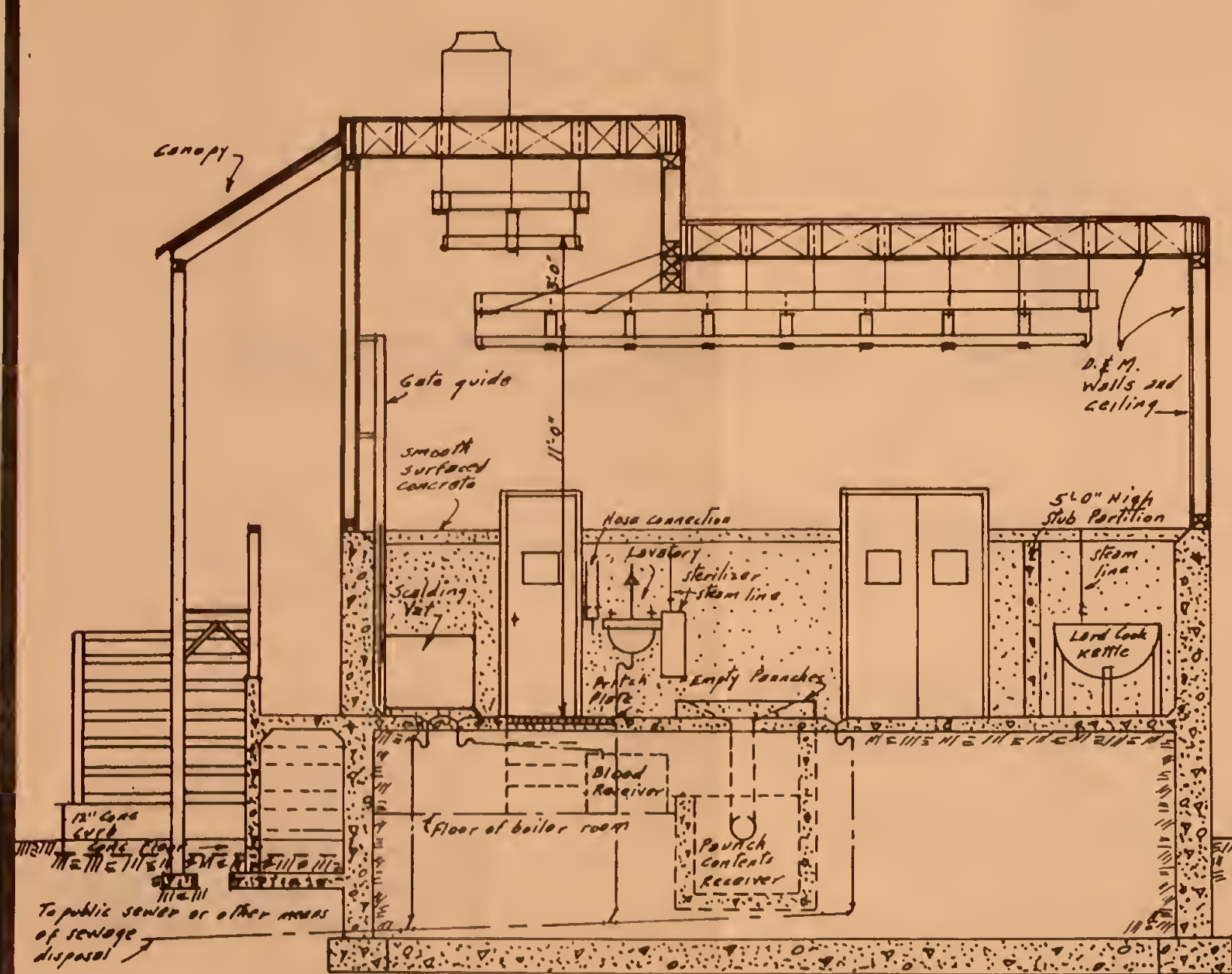
If the curing and smoking of meat and the preparation of meat food products are contemplated, the plant should be enlarged and properly arranged for these operations.

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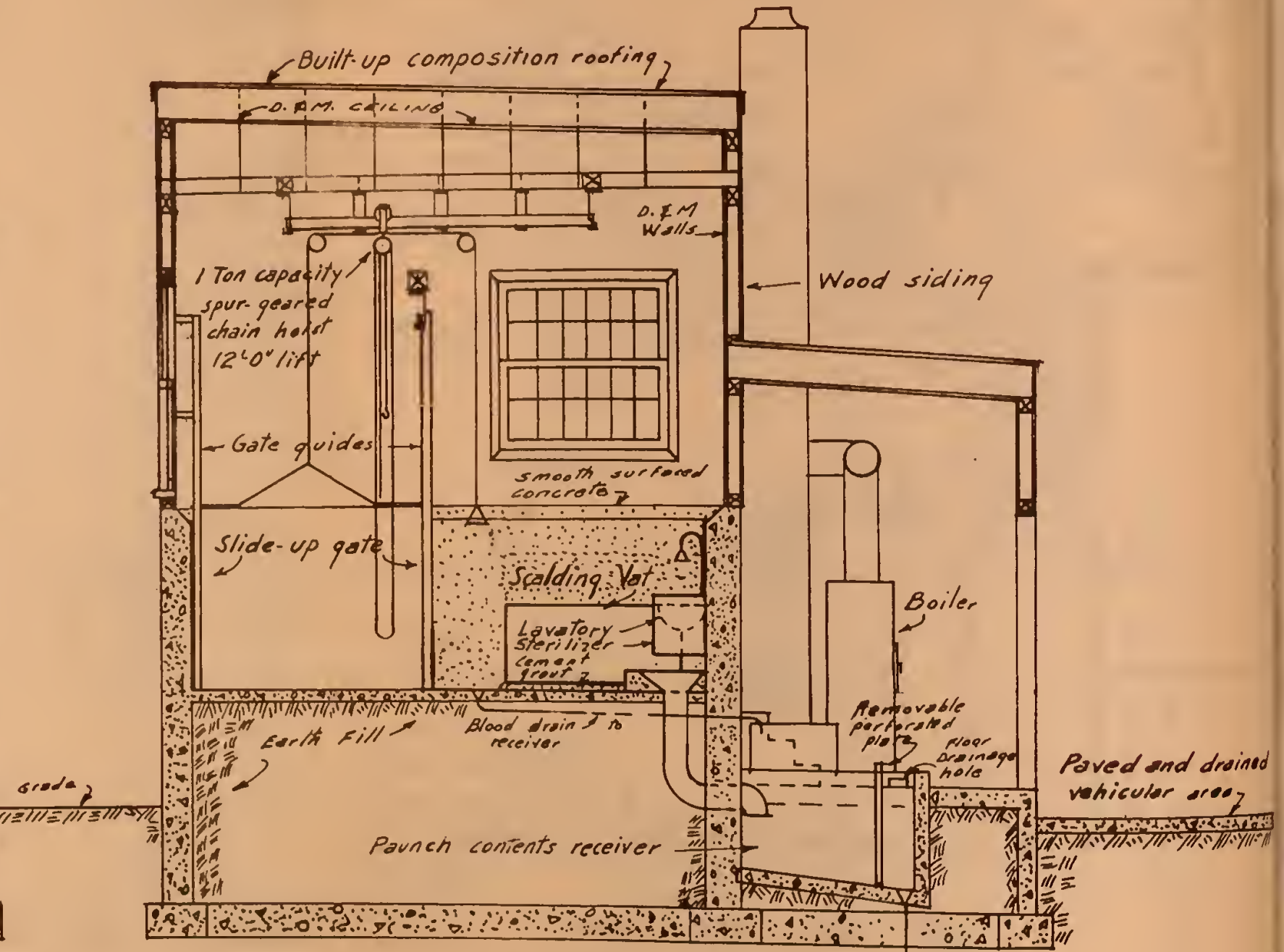
If further information relative to projects of this kind is desired, the Washington office of the Meat Inspection Division will be pleased to furnish it upon request.

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Section "A-A"



Section "B-B"

